

MDCAT 2022

BIOLOGY

LIVE CLASS

NERVOUS SYSTEM

Lecture # 1



1. Nervous Sys
2. Chemical Co-ordination (Endocrine)

COORDINATION AND CONTROL

5. PMC

- **Nervous system**
  - Steps involved in coordination system
  - Neurons
  - Nerve impulse
- **Synapses**
- **Feedback mechanism**
- **Reflexes and reflex arc**
- **Parts of CNS and their functions**

Brain + Spinal cord

Nervous System

↓

Neuron

Ectoderm mainly gives rise to:

A. Musculo-skeletai system ✓ (Meso)

B. Nervous system (circled)

C. Respiratory system — Meso / Endo

D. ✓ Cardiovascular system

ECTO
E.N.I

MESO
- Muscle Sys ✓
- Skeletal Sys ✓
- Reproductive
- CVS

Endo → Digestive Sys.
E.G.G
→ G.I.T
→ Glands
→ Liver
→ Pancreas

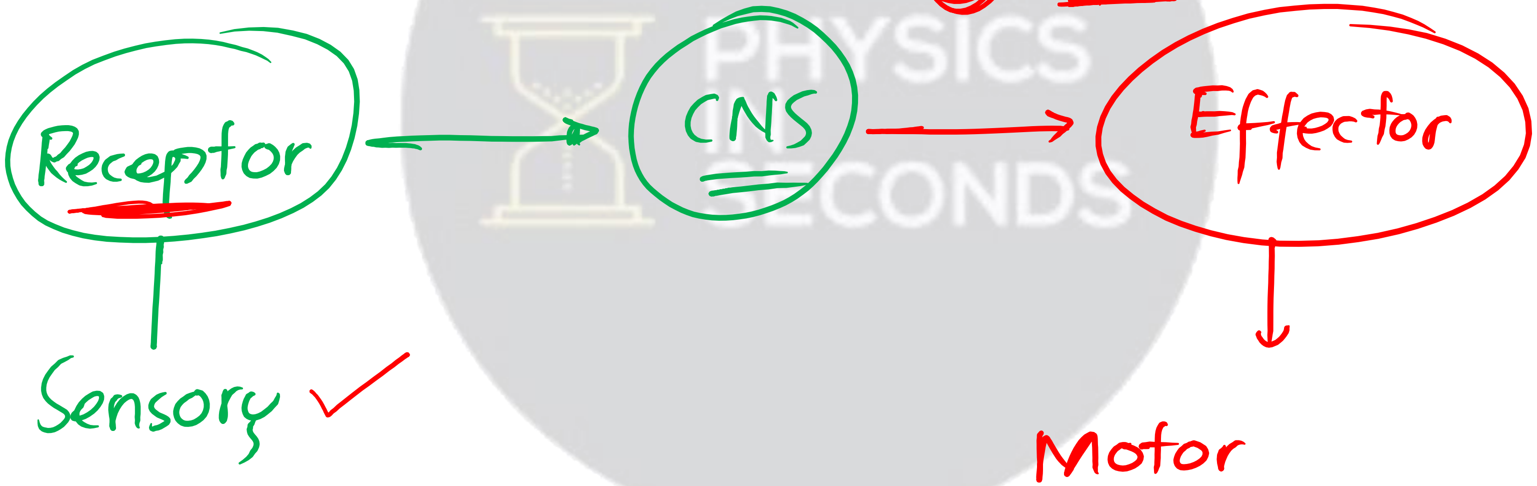
A motor nerve carries impulses from:

A. Spinal nerves to effectors

B. Effectors to cranial nerves

C. Effectors to CNS

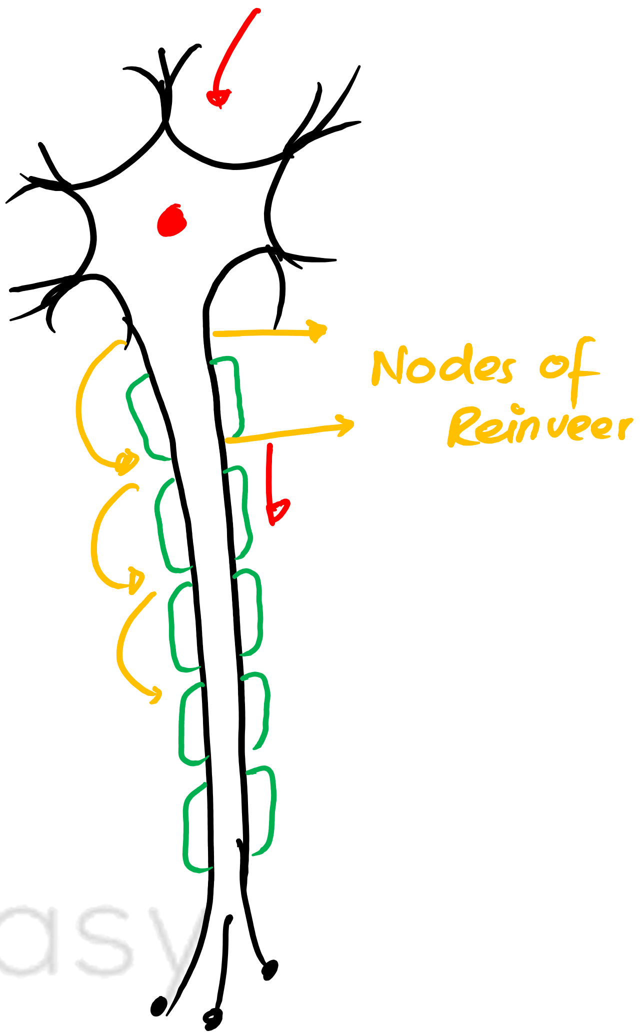
D. CNS to effectors



Which of the following is not correct about myelin sheath?

Sphingolipids.

A. Composed of specialized lipids
B. Responsible for saltatory conduction
C. Conduct impulses
D. Absent on nodes of Ranvier



Myelin sheath:

A. Is found in all axons
B. Is found in all dendron
C. Speeds up conduction
D. Is proteinaceous → lipid

Mylein
Myleinated
Non-myleinated

Which one of the following are also known as afferent neurons?

A. Sensory → Afferent
B. Associative
C. Motor → Efferent
D. Mixed

It is not true about cell body of neuron:

Axoplasm → Axon

Cell body → Neuroplasm.

A. Main nutritional part ✓
B. It contains axoplasm
C. Biosynthesis of materials
D. Regenerate axonal and dendrite fiber

Which of the following is most abundant type of neurons in CNS?

A. A. Sensory neurons

B. Associate neurons /Relay

C. Motor neurons

D. Neuroglial cells

Which one of the following gives a tree-like appearance to neurons?

Single /Thick

Sensory

A. Dendron

B. Soma

C. Dendrites

D. Axons

Which of the following is not a part of neuron?

A. Axon ✓

B. Dendrons ✓

C. Nissl’s granules ✓ → Soma

D. Synapse

Steps of Coordination

Information received by different receptors of body is analyzed by:

CNS

A. Autonomic nervous system
B. Central nervous system ✓
C. Parasympathetic nervous system
D. Sympathetic nervous system

Sense of hearing is concerned with:

A. Cerebral cortex ✓

B. Medulla

C. Hypothalamus

D. Cerebellum

Pressure is felt by your body immediately after it is applied This is achieved with the help of:

A. Mechanoreceptors ✓
B. Thermoreceptors
C. Nociceptors
D. Chemoreceptors

Stimulus of touch, pain, cold and heat are recognized differently because: Noci Thermo.

A. For each sensation, different form of nerve impulse is generated ✗
B. Different receptors are present for detection of stimuli ✓
C. All nerves send their impulse to same part of brain
D. Each stimulus acts on different parts of body

GLIAL CELL →

(1) Astrocytes (2) Oligodendrites
(3) Microglia (4) Ependymal



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NERVOUS SYSTEM

Lecture # 2



5. PMC

- **Nervous system**

➢ Steps involved in coordination system — R, E, N

➢ Neurons ✓

➢ Nerve impulse

- **Synapses**
- **Feedback mechanism**
- **Reflexes and reflex arc**
- **Parts of CNS and their functions**

Depolarization is the result of:

A. Influx ofK+

B. Influx of Na+ → Depolarization

C. Efflux of K+ → Repolarization

D. Efflux of Na+

Which of the following causes the hyperpolarization across Neurolemma:

A. Distribution of charge

B. Influx of Na+

C. Late closing of K+channels

D. Outward diffusion of Na+

Which one of the following sets of ions is necessary for transmission nerve impulse:

A. Na^+ and K^+
B. Ca^{2+} and Na^+ ✗
C. Ca^{2+} and K^+ ✗
D. Na^+ and Mg^{2+} ✗

Which of the following will restore original ion gradients and RMP after hyperpolarization in neurons?

A. K+ channels

B. Na+/K4 pumps

C. Na4 channels

D. Ca++ channels

$3Na^+$ ↑ ATP ↓ $2K^+$

Microscopic gap between the neurons is called:

A. Synapse ✗

B. Synaptic cleft

C. Collapse ✗

✗ D. Pre-synapse membrane

Which ion is involved in release of Acetylcholine from pre-synaptic fiber into extracellular fluid?

A. Calcium
B. Potassium
C. Sodium
D. Magnesium

Ca^{++} → Neurotransmitter → Exocytosis → Release
↓
Post-Synaptic → Action potential

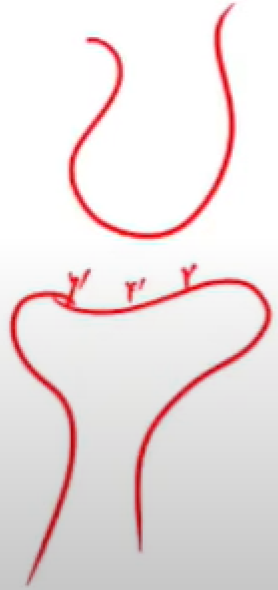
Neurotransmitter molecule binds to receptors that are located on:

A. Synaptic knob

B. Pre-synaptic membrane

C. Post synaptic membrane

D. Synaptic cleft



After the depolarization of post synaptic neurolemma, neurotransmitters are mostly:

A. Taken up by Schwann cells
B. Remain in synaptic cleft
C. Degraded by enzymes
D. Taken up by post synaptic membrane

Which of the following acts as a messenger in both chemical and nervous Coordination:

A. Acetylcholine ✗

B. Nicotine ✗

C. Dopamine ✗

D. Epinephrine

Myelin sheath of the nerve fibers of the central nervous system is produced and maintained by:

A. Oligodendrites → CNS
B. Astrocytes
C. Microglia
D. Schwann cells → PNS

The transmission of nerve impulse in the synaptic cleft is:

A. Chemical and unidirectional
B. Chemical and bidirectional
C. Electrical and unidirectional
D. Electrical and bidirectional

Unidirectional transmission of a nerve impulse through nerve fiber is due to the fact that:

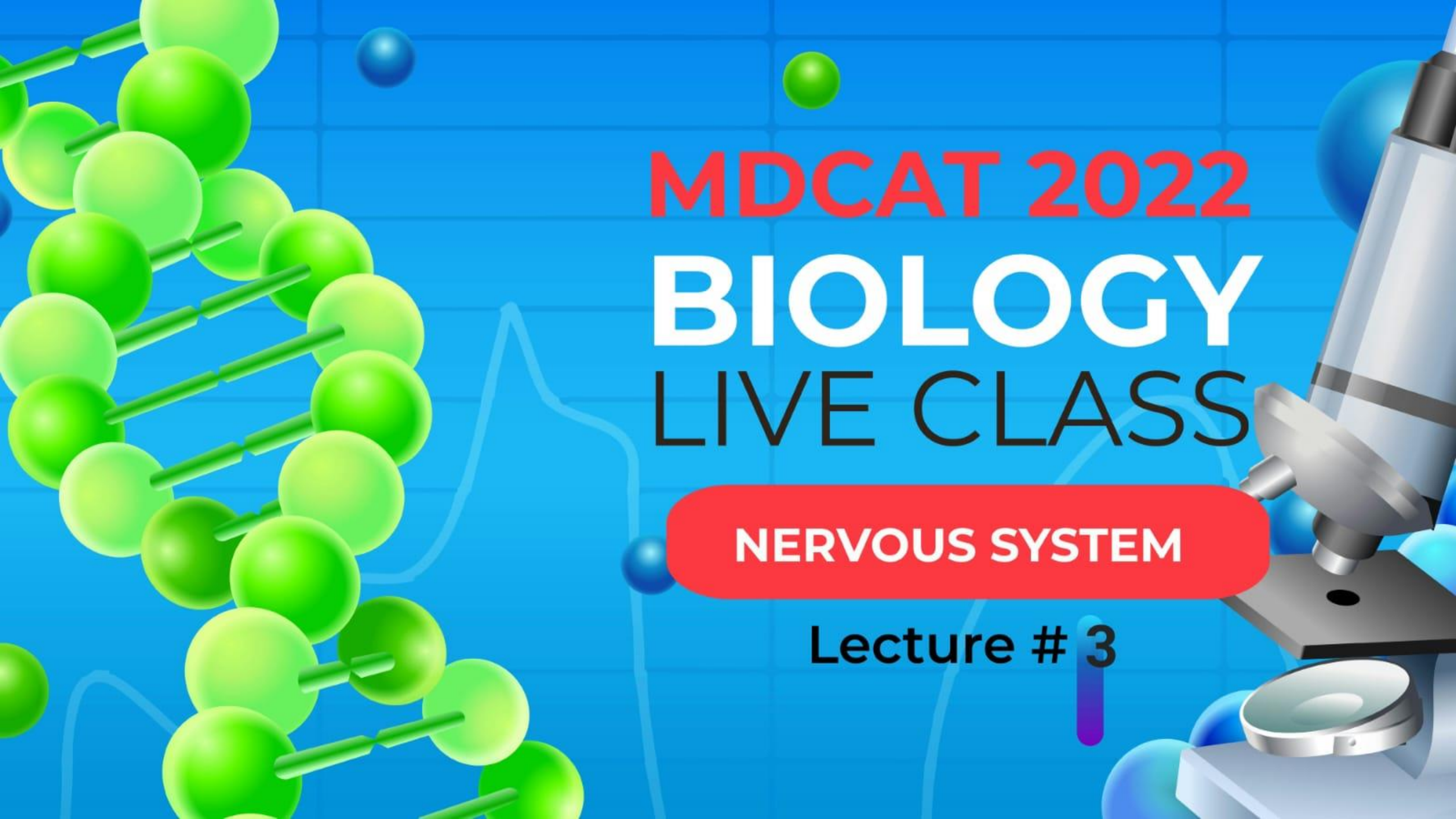
Mylein

A. Nerve fiber is insulated by a medullary sheath

B. Sodium pump starts operating only at cyton and then continues into the nerve fiber

C. Neurotransmitters are released by dendrites and not by axon endings

D. Neurotransmitters are released by the axon endings and not by dendrites


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NERVOUS SYSTEM
Lecture # 3

5. PMC

- **Nervous system**
  - ➢Steps involved in coordination system
  - ➢Neurons
  - ➢Nerve impulse
- **Synapses**
- **Reflexes and reflex arc**
- **Parts of CNS and their functions**

Spinal cord terminates at the level of:

A. Sacrum ✗
B. Coccyx ✗
C. Lumber region ✓
D. Pelvic region

Grey matter is composed of:

A. Schwann cells ✗
B. Neuron fibres ✗
C. Cell bodies of neuron
D. Nissl's granules

Spinal → Inner
Brain → Outer

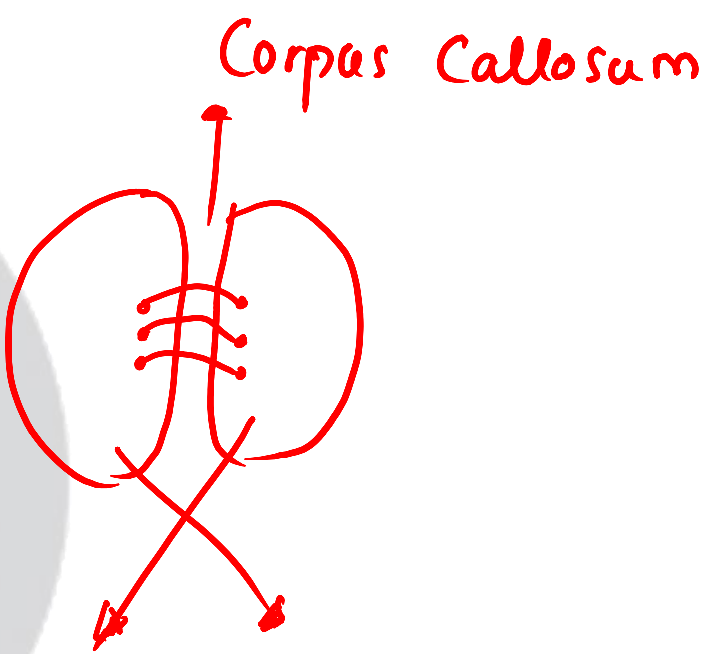
Which of the following is most abundant type of neurons in CNS?

A. Sensory neurons
B. Associate neurons
C. Motor neurons
D. Neuroglial cells

Inter
Relay Neurons

The primary function of spinal cord is to:

A. Produce CSF ✗
B. Produce hormones ✗
C. Communicate two hemispheres ✗
D. Communicate brain with rest of body

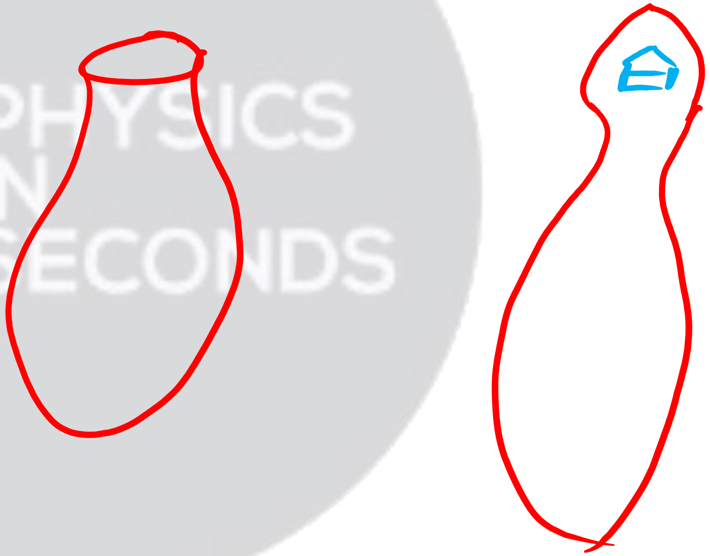


Which of the following is not the part of forebrain:

A. Thalamus ✓
B. Amygdala ✓
C. Hippocampus ✓
D. Pons ✗

CNS was first developed in: (Nervous System)

A. Cnidarians
B. Platyhelminthes ✓
C. Chordates
D. Mammals



One that connects both cerebral hemispheres is called:

A. Corpus luteum → Ovulation

B. Corpus striatum

C. Corpus callosum → Axons

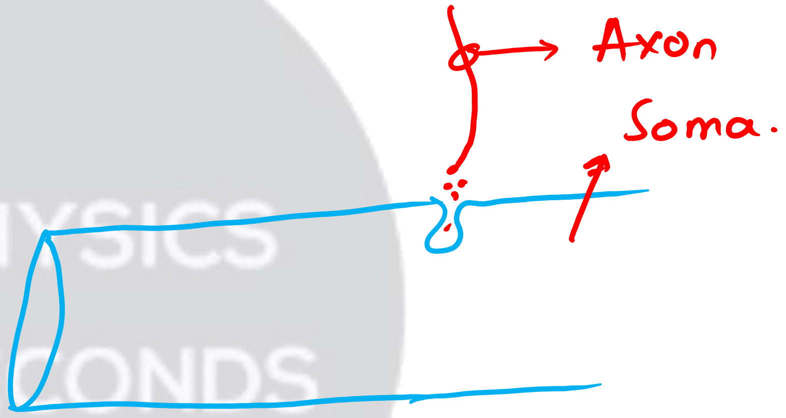
D. Tracts

Thermostat in body is located in:

A. CNS
B. Hypothalamus → Thermostate 37°C ↑ Fever (Pyrexia)
C. Thyroid glands
D. Skin vessels

These contain cell bodies of neurons:

A. Nuclei and white matter
B. Ganglia and gray matter
C. Nerve and ganglia
D. Nerve and white matter



PHYSICS IN SECONDS

Physics made easy

PhysicsInSeconds